

**WHAT IS CLAIMED IS:**

1. A method of manufacturing a rotor for a high vacuum turbomolecular pump, comprising the steps of:
  - providing a workpiece being made of a material suitable for producing of said rotor;
  - 5 forging said workpiece to obtain a generally cylindrical body(1,11) having a homogeneous mechanical properties, and
  - obtaining one or more sets of radial peripheral vanes thereon.
2. The method of claim 1, wherein said generally cylindrical body is a cylindrical billet (1)  
10 that is obtained by forging through an axial compression ( $P_1$ ) thereof while preventing at the same time its radial expansion.
3. The method of claim 1, wherein said rotor is a bell-shaped rotor.
- 15 4. The method of claim 3, further comprising the steps of:
  - forging said generally cylindrical body being a cylindrical billet (1) through an axial compression ( $P_1$ ), and
  - subsequently forming a cavity within said cylindrical billet by means of a punch (12) that is forced into the billet, while preventing at the same time radial expansions of the billet through  
20 confinement in a mold.
5. The method of claim 4, wherein the steps of forming a cavity comprising extending said cavity (13) over a part of said cylindrical billet and refining by subsequent mechanical working.
- 25 6. The method of claim 5, further comprising the steps of forming of a central bore on a bottom of said cavity and subsequently providing a thermal treatment for improving mechanical properties of said bell-shaped rotor.
7. The method as claimed in any preceding claim, further comprising a step of processing  
30 said at least one set of radial peripheral vanes by one or more techniques selected from the group consisting of milling, turning and electric discharge machining.
8. A rotor for a turbomolecular pump produced by the method of claim 1.

9. The rotor for a turbomolecular pump of claim 8, having parameters  $R$ ,  $A$  and  $R_{0.2}$  that are constant in all directions throughout of said rotor.